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Vaccination Against Johne's Disease

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It is generally recognised at the present time that when Johne's disease becomes firmly established in a herd there is no practical and reliable method for controlling it and that eradication is a difficult, expensive and long-drawn-out procedure. Indeed, unless a herd is of exceptional value it is questionable whether, in the light of existing knowledge, it is economically sound to attempt eradication and the best that can be hoped for from the control measures usually recommended (removal of clinical cases, testing with johnin, provision of a clean water supply and the safe disposal of infected manure) is that the spread of infection may be retarded.

Many factors are probably involved in the establishment and spread of the disease within a herd, such as the nature, drainage and mineral content, and *p*H of the soil, the area of pasture available, the nutrition of the animals, the water supply and general hygienic conditions of the herd. Smythe (1935) pointed out that there is a considerable difference in the incidence of the disease in parts of Cornwall; on the north coast where the soil contains a high proportion of blown shell sand with a calcium carbonate content up to 25 per cent., clinical cases of Johne's disease are rare, although lesions of it are frequently found at autopsy, but when cattle from the coast are moved to the adjoining granite area, where the soil is acid and deficient in lime, they frequently develop symptoms of the disease within a short time.

It was at one time hoped that the johnin test would provide a solution to the problem of control, but it has not yet fulfilled these hopes and eradication of the disease by repeated testing is not at present a practical proposition. The main weakness of the test lies in the fact that it fails to induce reactions in a percentage of preclinically infected animals, many of which are undoubtedly excreting Johne's bacilli, and there is the additional but lesser objection that johnin induces strong reactions in animals sensitised by avian tubercle bacilli, although when animals react strongly to johnin provided there are reasonable grounds for believing that infection with avian tubercle bacilli is absent, they usually prove on *post-mortem* examination to be infected with Johne's disease. It also may cause reactions in animals sensitised by bovine tubercle bacilli. The test fails also to elicit a reaction in a high percentage of clinically affected animals, but this is not of great importance as other means are available for the diagnosis of these cases. Yet in spite of its imperfections, the test when used with caution and understanding can be of considerable assistance in the control of the disease.

VACCINATION

Vallée (1924) carried out immunity experiments on cattle against tuberculosis using an attenuated equine strain of the tubercle bacillus, the m.l.d. of which strain for guinea-pigs was 1 mg. He showed that when the bacilli were suspended in a readily absorbable excipient, they were eliminated from the system within three months of inoculation, and a transient protection only was conferred. But when an unabsorbable excipient was used, a fibro-caseous nodule formed at the site of inoculation in which the bacilli persisted for two to three years without showing any tendency towards generalisation; and a durable immunity was conferred that ran parallel to the persistence of the nodule. It is this principle that Vallée has successfully exploited in the immunisation of cattle against Johne's disease.

The vaccine consists of 5 to 15 mg. of unattenuated, living Johne's bacilli suspended in paraffin to which some powdered pumice stone is added. A small inflammatory swelling appears at the site of inoculation and this is gradually replaced by a cold, non-painful, fibro-caseous nodule that persists for a long time.

Twort and Ingram (1913), M'Fadyean and Sheather (1916), and Vallée (1924) failed to set up infection by the subcutaneous inoculation of Johne's bacilli. Vallée and Rinjard (1926) inoculated 16 cattle subcutaneously with doses of the paraffin vaccine varying from 5 mg. to 15 mg. and kept them under observation for one year. All remained normal. The authors believed at that period that an animal was protected only as long as a nodule was present.

Vallée and Rinjard and Vallée (1934) stated that as the result of their considerable experience with the vaccine one thing was clear, "celles de l'innocuité incontestable de la méthod." They reported that more than 35,000 cattle had been inoculated in France without a single untoward incident. The vaccine proved effective on 133 heavily infected farms containing 5,650 cattle and partially effective on 20 farms containing 800 cattle. It appeared to have failed only in those cattle in which the vaccination nodule had quickly disappeared and which were, presumably, already infected at the time of inoculation.

Lominet (1936), referring to the use of the vaccine on infected herds in France, states: "The method of Vallée and Rinjard is, in the opinion of veterinary surgeons and stock breeders in the Department de la Manche, the best means of protecting cattle [against Johne's disease.] The safety and efficacy of the method are certain as has been proved by thousands of successful inoculations."

Hagan (1935) carried out immunity tests on 20 calves, ten vaccinated and ten controls, using living Johne's bacilli. Two different types of vaccine were prepared; in one the bacilli (50 mg.) were suspended in 1 c.c. paraffin, whereas in the other they were suspended in 0·85 per cent. salt solution. It is not stated which type of vaccine individual animals received and in view of Vallée's statement that bacilli suspended in a readily absorbable excipient confer only a transient protection, this point is important. The vaccinated and control animals were exposed to natural infection and were in addition given on six occasions food artificially contaminated with suspensions of intestinal scrapings from infected animals. Each animal was re-vaccinated on four occasions at intervals of six months. After two and a half years the animals were killed and examined; six of the ten vaccinated animals showed no lesions, but in four of these a few acid-fast bacilli were found in smears of intestinal scrapings; three of the remaining four animals showed moderate lesions and a considerable number of bacilli and the fourth was a clinical case. Four of the controls died of Johne's disease at eight, 15, 19 and 24 months, respectively, after exposure to infection; two exhibited gross lesions with numerous bacilli and one showed microscopic lesions and a few bacilli; three showed no evidence of infection. Hagan considered that these results justified further investigation of the vaccine.

Datta (1938) in India stated that "vaccine suspended in a fatty medium as in France has been tested without success." The data on which this statement was based were not given.

Ware and Srinvasan (1941) in India vaccinated a number of cattle according to the method of Vallée and Rinjard and exposed them to natural infection. But as the disease failed to spread naturally in the herd no conclusions could be drawn as to the efficacy of the vaccine.

Record of Experiments

EXPERIMENTS WITH CATTLE

Vaccine was prepared from a strain (No. II) of Johne's bacillus obtained through the courtesy of Dr. E. A. Watson, Animal Disease Research Institute, Canada. This strain was trained by him to grow on synthetic medium without the addition of acid-fast bacillary extract; we have grown it on Reid's synthetic medium without the addition of extract. The bacilli used in the vaccine were dried between sterile filter papers, weighed and suspended in paraffin. This method of preparation has been discontinued and vaccine is now prepared from freeze-dried organisms.

The five calves used in the experiment were bought when a few days old from "attested" herds. They were brought to the laboratory, kept in isolation and reared on milk from tuberculin-tested cows. At five months of age each calf was inoculated in the neck with 30 mg. of bacilli in paraffin; three animals received one dose of vaccine subcutaneously, one was given two doses subcutaneously on opposite sides of the neck and one received one dose intramuscularly in the neck. Four of the five animals were killed two years and eight months after inoculation.

SHORTHORN BULLOCK 329. *Post-mortem examination.*—In fat condition. There was a fibro-caseous lesion at the site of inoculation measuring 10 in. × 5 in × 2 in.; it was situated mainly in the subcutaneous tissue, but there was slight involvement of the underlying muscular tissue. The lesion was composed of fibrous tissue with numerous small cavities containing caseo-calcareous material. Both prescapular lymphatic glands were normal on section. Smears

of the inoculation lesion, prescapular glands, mesenteric glands and intestines were negative for acid-fast bacilli.

Guernsey Bullock 322. Four months after the original inoculation (30 mg.) a second inoculation consisting of 5 mg. bacilli was given subcutaneously on the opposite side of the neck.

Post-mortem examination.—In good condition. The original inoculation had given rise to a fibro-caseous swelling measuring 4 in. × 3 in. × ½ in. The second inoculation caused a soft swelling which was divided into small cavities containing thick creamy pus. Both prescapular glands were normal on section. Smears of the inoculation lesions, prescapular glands, mesenteric glands and intestines were negative for acid-fast bacilli.

Guernsey Bullock 336. *Post-mortem examination.*—In good condition. There was a fibro-caseous lesion at the site of inoculation measuring 3 in. × 1 in. Smears of the caseous material showed numerous degenerate acid-fast bacilli. Both prescapular glands were normal on section. Smears of the prescapular glands, mesenteric glands and intestines were negative for acid-fast bacilli.

Guernsey Bullock 337. This animal had been inoculated intramuscularly.

Post-mortem examination.—In good condition. The inoculation lesion was entirely in the muscular tissue and measured 10 in. × 3 in. × 1 in. Both prescapular glands were normal on section. Smears of the inoculation lesion, prescapular glands, mesenteric lymphatic glands and intestines were negative for acid-fast bacilli.

Shorthorn Heifer 318. This heifer is still under observation and is in good condition and normal health. It is over four years since the inoculation was carried out and a hard fibrous lesion is still present on the neck. Two years and eight months after inoculation she gave birth to two full-time dead calves. She has since passed through a period of lactation and is now dry and in calf again.

Experiments With Goats

Subcutaneous Inoculation of Vaccine

Eight goats were inoculated from the same lot of vaccine as was used for the cattle. These goats, aged from two to three months, were negative to mammalian and avian tuberculins immediately before inoculation. Each goat was inoculated subcutaneously with 30 mg. of bacilli, suspended in paraffin.

One goat (574) was killed 14 months after inoculation; one (576) died 15 months after inoculation; the remaining five were killed for examination two years and seven months after inoculation.

Goats 528, 516, 575, 587, 581. *Post-mortem examinations.*—All in good condition. A fibro-caseous nodule was present at the site of inoculation in each animal and on the same side the prescapular gland was enlarged and showed caseous foci. No acid-fast bacilli were found in smears of the inoculation lesions, the prescapular glands, the mesenteric glands or the intestines.

Goat 586. In addition to the original inoculation (30 mg.) this goat was given four months later a second inoculation (5 mg.) on the opposite side of the neck; the nodule caused by this inoculation broke after three months and gradually diminished in size until at the end of 21 months there remained only a fibrous thickening of the skin.

Post-mortem examination.—In excellent condition. There was a small fibro-caseous nodule at the site of the original inoculation which showed on section many pin-point caseous lesions. Both prescapular glands contained small caseous lesions. No acid-fast bacilli were found in smears from the inoculation lesions, the prescapular glands, the mesenteric glands or the intestines.

Goat 576. This goat died suddenly 15 months after inoculation.

Post-mortem examination.—In good condition. The cause of death was not ascertained. There was a small fibro-caseous nodule at the site of inoculation and smears showed numerous acid-fast bacilli. The prescapular glands were normal on section. Smears of the prescapular and mesenteric glands and the intestines were negative for acid-fast bacilli.

Goat 574. Killed 14 months after inoculation. A fibro-caseous nodule was present at the site of inoculation. The prescapular gland on the same side showed many caseo-calcareous foci. Smears of the inoculation lesion and the prescapular gland showed numerous acid-fast bacilli. No acid-fast bacilli were seen in smears of the mesenteric glands or the intestines.

Goats Inoculated With an English Strain of Johne's Bacillus

This strain, isolated from a clinically affected cow, was induced to grow on synthetic medium without the addition of acid-fast bacillary extract.

Three goats (591, 611, 609) aged about two months, were each inoculated subcutaneously with 5 mg. bacilli in paraffin. These goats were isolated for twelve months after inoculation when they were killed for examination.

Post-mortem examinations.—All in good condition. Smears from the inoculation lesions showed numerous acid-fast bacilli. The intestines and mesenteric lymphatic glands were normal in appearance and no acid-fast bacilli were found in smears from them.

Two goats aged two months were kept in contact with those vaccinated and at the end of twelve months were negative to avian and mammalian tuberculins.

Summary

The object of these experiments on cattle and goats was to verify the safety of the vaccine when inoculated subcutaneously. A large dose of vaccine, 30 mg. was given to each calf; that is six times the usual prophylactic dose (5 mg.). Two years and eight months after inoculation the four cattle were passed as Grade A; the vaccine clearly had no detrimental effect. The big dose of vaccine caused unsightly fibro-caseous swellings on the neck but in none of the cattle did the infection pass to even the nearest lymphatic gland. A careful examination of each animal failed to show evidence of infection of either the mesenteric lymphatic glands or of the intestines. In three animals no acid-fast bacilli were seen in smears of the inoculation lesion at the time of autopsy and in the fourth animal degenerate forms only were found.

Although the dose of 30 mg. bacilli was relatively greater for goats than calves, it had no appreciable effect on either their health or condition. The fibro-caseous lesions caused by the vaccine were similar to those which occurred in the cattle. With the exception of one goat, 576, the infection extended into the prescapular gland on the side of inoculation, but there was no extension beyond that point. No acid-fast bacilli were found at the site of inoculation in the goats examined two years and seven months after inoculation. In two goats, 574 and 576, examined 14 and 15 months respectively after inoculation, numerous typical acid-fast bacilli were still present in the fibro-caseous nodule on the neck. Smears of the mesenteric glands and from various parts of the intestines of all the goats were negative for acid-fast bacilli. Caseous material from the inoculation lesions of the cattle and goats, examined two and a half years after vaccination, was sown on Reid's synthetic medium, but in no instance was growth of Johne's bacilli obtained.

In addition, caseous material from each inoculation lesion was suspended in 0·85 per cent. saline solution and inoculated into four guinea-pigs. No lesions were found on *post-mortem* examination in any of the guinea-pigs.

Goats Inoculated Intravenously

Vallée and Rinjard (1926) and Lominet (1936) stated that when animals infected with Johne's disease were vaccinated subcutaneously, the oily inoculum was either quickly expelled or absorbed in two to three months; and as the principle involved (prémunition) required the presence of a persistent focus of infection, immunisation was not effected. In an attempt to study this point goats were inoculated intravenously with varying amounts of bacilli suspended in 0·85 per cent. salt solution and later inoculated subcutaneously with paraffin vaccine. These goats, with the exception of No. 510, which was inoculated intravenously only, were killed two and a half years after the original inoculation.

Goats Nos. 500, 519, 604 and 602 were inoculated intravenously with 51, 17, 10 and 5 mg. bacilli, respectively; three months later each goat was inoculated subcutaneously with 5 mg. bacilli. Nos. 500 and 519 failed to develop an inoculation lesion. No. 604 showed a typical fibro-caseous lesion and 602 had a small atypical swelling containing thick pus. No acid-fast bacilli were found in either the inoculation lesions (Nos. 604 and 602) or the intestines and associated lymph glands of any of these goats.

Goat No. 510. Inoculated intravenously with 34 mg. bacilli. Gave birth to a normal kid ten months later. When killed three and a half years after inoculation, there was a fibro-caseous nodule present on the skin behind the shoulder; smears from the nodule showed a few groups of acid-fast bacilli. The prescapular glands were normal on section and smears were negative. The small intestines were normal in appearance, but smears showed numerous groups of acid-fast bacilli. A few isolated acid-fast bacilli were found also in smears from the mesenteric lymph glands. The nodule on the skin was caused presumably by the Johne's bacilli circulating in the blood finding a bruised area suitable for their existence, similar to the occurrence of *Br. abortus* in the knee hygromas of cattle.

Tuberculin Tests of Vaccinated Animals

Vallée and Rinjard (1926) stated that vaccinated animals do not react to mammalian tuberculin, but that they reacted more or less clearly to johnin, especially when this was prepared by extraction in the cold; and that better reactions were induced in vaccinated animals than in those naturally infected.

The following observations on this question were made during the course of the experiments here recorded. All tests were made by single intradermal injections of 0·05 c.c. of tuberculin in the

caudal fold. A synthetic medium tuberculin, prepared from human strains of tubercle bacilli in accordance with the method of Dorset (1934), was used.

CALVES

Group I.—Four calves were inoculated subcutaneously with vaccine; two received 2 mg. bacilli each and two 5 mg. in paraffin each. They were tested with mammalian tuberculin at intervals of two, four and six months after inoculation; two were positive at two months and one at four and six months. The size of inoculum had no apparent influence on the tuberculin reaction.

Group II.—Three calves, aged six, seven and 30 days respectively, were each inoculated subcutaneously with 5 mg. of bacilli. When tested 30 days later with mammalian tuberculin all gave positive reactions.

Group III.—Five calves were given 30 mg. bacilli; four were inoculated subcutaneously and one intramuscularly. They were tested two months later with mammalian and avian tuberculin; three were positive and two negative to mammalian tuberculin; and all were strongly positive to avian tuberculin.

GOATS

Eighteen goats inoculated subcutaneously with doses ranging from 5 mg. to 30 mg. of bacilli were tested with mammalian tuberculin at two months and 30 months after inoculation. Fourteen gave positive reactions and four were negative. Eight goats inoculated intravenously with doses varying from 5 mg. to 85 mg. of bacilli were tested with mammalian tuberculin at one, seven and 30 months after inoculation. All gave negative reactions.

Calmette and Guerin (1927) reported that cattle inoculated subcutaneously with B.C.G. reacted for a much longer time to tuberculin than those inoculated intravenously and that subcutaneous inoculation conferred the stronger protection.

GUINEA-PIGS

Thirty guinea-pigs, divided into groups of six, were inoculated subcutaneously with varying doses of bacilli (0·2 mg., 0·6 mg., 1·2 mg., 1·8 mg., 2·5 mg.). Tested intradermally with mammalian tuberculin (diluted 1:10) at intervals of one and two months after inoculation, all gave positive reactions.

Summary of Results

Eight of the twelve calves inoculated subcutaneously gave positive reactions to mammalian tuberculin. Although the reactions were distinctly positive, they were less intense than those usually seen in animals recently infected with bovine tubercle bacilli. Fourteen out of 18 goats inoculated subcutaneously gave positive reactions to mammalian tuberculin. In addition to tests with mammalian tuberculin the vaccinated animals were tested with avian synthetic medium tuberculin, and it will be sufficient to mention that with the exception of those inoculated intravenously, all gave positive reactions.

The results of these tests are not in agreement with the claims of Vallée and Rinjard. They give no details of the mammalian tuberculin used and their results would suggest that it was lower in potency than modern synthetic medium tuberculin. In this connection it should be remembered that considerable progress has been made, since the publication of their work, in the preparation of tuberculin, especially in increasing the potency. Dorset (1934) reported that in comparative tests between broth tuberculin and synthetic medium tuberculin carried out on 13,288 cattle, 1,127 reacted to the broth tuberculin and 1,268 to the synthetic medium tuberculin—a difference of approximately 11 per cent. One hundred and thirty-five of the 141 additional animals that reacted to synthetic tuberculin were found at autopsy to be tuberculous. No animal in the series reacted to broth tuberculin without at the same time reacting to the synthetic medium tuberculin.

Johnson, Milligan and Cox (1941) recorded testing three herds, comprising 34 cattle, with tuberculin and johnin, using single intradermal injections in the caudal folds. Twenty-four animals reacted to the johnin test; and nine of these reacted also to the tuberculin test. None of the johnin negative cattle reacted to the tuberculin test. No lesions of tuberculosis were found in the nine animals reacting to both tests, but all were proved macroscopically and microscopically to be affected with Johne's disease.

DISCUSSION

In view of the economic importance of Johne's disease in certain areas of this country, it is strange that the considerable evidence submitted by Vallée and Rinjard (1934) on the efficacy of their vaccine should have been so generally ignored.

The reason for this may possibly be that the vaccine contains virulent bacilli, but as there is now considerable evidence that the method is without danger, an adequate trial on selected herds would appear to be justified.

There are many herds in which occasional clinical cases of the disease occur, but in which the incidence over the course of years has shown no tendency to increase and the economic loss remains relatively small. The use of vaccine in these herds could not be justified. It is in heavily infected herds where the usual methods of control have failed and economic loss is high that recourse to vaccination would appear to merit a trial. It must be emphasised, however, that the vaccination of cattle with living unattenuated Johne's bacilli is clearly a procedure that should not be lightly undertaken and its application must at present be restricted to selected herds and the results carefully studied.

In the absence of a reliable diagnostic test for the detection of pre-clinically infected animals, it would be advisable, in the light of present knowledge, to restrict the use of vaccine to unweaned calves in infected herds; at this stage of life there are reasonable grounds for assuming that animals have not yet contracted the infection. It would appear to be generally accepted that the disease is contracted during early life, the period of incubation is long and clinical symptoms usually follow some adverse condition or strain on the system, such as calving, malnutrition, or grazing on mineral deficient pastures. Cattle that have had access to infected pastures or have been in contact in byres with others of a known infected herd, should not be vaccinated; some of these animals would probably be infected and the subsequent development of symptoms would cause disappointment and perhaps jeopardise the reputation of the vaccine.

No evidence was found that the bacilli suspended in an oily excipient and inoculated subcutaneously were excreted through the intestinal tract, but even if a few bacilli were excreted by this route it would not be of major importance in a heavily infected herd. Vallée (1924) stated that when the bacilli were suspended in an unabsorbable excipient they persisted for two or three years in the inoculation lesion. In the results here recorded no acid-fast bacilli were found in the inoculation lesions of three out of four cattle when examined after two years and eight months; in the fourth animal numerous degenerate acid-fast bacilli were found. Similarly, acid-fast bacilli were not found in the inoculation lesions of five goats examined after two years and seven months. In goats examined, twelve, 14 and 15 months, respectively, after inoculation, numerous acid-fast bacilli were still presen in the lesions. It is not safe, therefore, to postulate that as long as a lesion persists re-vaccination is unnecessary. On the other hand, there would appear to be some doubt as to whether re-vaccination is essential. Vallée and Rinjard (1934) stated that animals are protected only as long as the inoculation lesion persists, but with further experience in the use of the method in the field they claimed (1941) that immunity persists even after the disappearance of the lesion. Until more information has been obtained on this point it would appear advisable to re-vaccinate animals three or four times at intervals of 15 months, or earlier if the inoculation lesion has been absorbed, in order to protect them during the period of greatest susceptibility to the disease.

Conclusions

(1) The experiments here recorded provide additional evidence that the subcutaneous inoculation of living Johne's bacilli is a safe procedure.

(2) The vaccine devised by Vallée and Rinjard for the protection of cattle against Johne's disease merits a trial in this country on heavily infected herds in which the usual measures of control have failed.

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THE VETERINARIAN AND POST-WAR PROBLEMS OF THE POULTRY INDUSTRY

BEFORE the war, in 1939, the poultry industry had reached an important place in our national economy, having become the third most valuable branch of agriculture, with an annual value of over £30,000,000—a figure only exceeded by the live cattle and the milk industries. Sixty-one per cent. of the eggs and 64 per cent. of the table birds consumed in Great Britain were produced in this country.

The poultry industry has an interesting and extensive organisation commencing with the pedigree breeders who maintain and distribute the foundation stock. Commercial breeders usually operate on a large scale by flock mating : the general farmers in this country are still, however, the largest poultry owners. Hatcheries, rearers and commercial egg and table poultry producers complete the wide range of this large industry.

Farmers are now appreciating the value of poultry in restoring or maintaining soil fertility. Many farmers use poultry in crop rotation, moving the birds from field to field throughout the farm, and then ploughing up the grass land, thus cashing the value of the manure. The birds are therefore always on clean land and the risk of picking up infection is considerably reduced.

The demand for fresh eggs and table birds has long not been satisfied by the farmers of this country and, while conditions still permitted, some portion of our needs was consequently supplemented by imported produce. The demand continues to increase because the nation's taste shows change to a lighter diet of eggs and poultry meat. Eggs are recognised as being among the most valuable protective foods. The poultry industry can supply the requirements of the nation when the normal importation of poultry foods is again permitted and when the industry has undertaken methodical expansion. Poultry population can be multiplied rapidly. If the sound foundation stocks of breeders are used in this process an additional great asset will accrue to the nation in the food of excellent quality so procured for the people.

There will be other great benefits. Not only will there be an increase in employment but the employment will be mainly of a healthy, rural character. The poultry industry requires a much greater number of skilled workers than does general farming, taking into account the acreage used. Furthermore, the milling and other specialised foodstuffs industries would be called upon to expand, as well as timber and metal trades supplying housing and other equipment.

It has been estimated that the ravages of disease in poultry flocks in Great Britain during 1925-1930 caused losses of about £4,000,000 per annum. A similar state of affairs was reported in most countries where poultry breeding was undertaken on a commercial scale. It is almost inevitable, after poultry foods are again forthcoming in abundance and flocks increase, that the relatively low death-rate recorded during 1939-1945 will tend to rise, and especially is this likely to occur if, as in 1920, newcomers, without previous knowledge of the industry, become engaged in it ; thus, within a short time, as then, we may expect to witness such people floundering in the midst of diseased and dying birds.

The time has therefore come to call the veterinary profession to awaken to its responsibilities to the community in this important matter, for they are responsibilities which in duty bound it must prepare itself to shoulder. The poultry industry has tremendous capital invested in stock and equipment, greatly exceeding, indeed, that of the other small-animal industry, namely, the dog and cat, which, for reasons that we need not enter into, has rightfully secured so much of the sympathy and skill of the profession.

The training given to veterinary students at some of the colleges contains little to stimulate the interest of future members of the profession in this work. This must be corrected. The student ought to be made well acquainted with the essentials of the poultry industry, as well as having a course of study embracing the main features of the large body of knowledge on the diseases of poultry that is now available, obviously by teachers with special experience. So far, in this country there are only a few veterinary surgeons who have made a special study of the diseases of poultry.

Since the Animal Health Division of the Ministry of Agriculture and Fisheries undertook to test flocks on Accredited Stations for carriers of *Salmonella pullorum*, all veterinary inspectors detailed for this work have attended courses of lectures and practical work upon the diseases of poultry and their control and the features of poultry husbandry, so that now nearly all the veterinary personnel of the Ministry of Agriculture have attended one of these courses.

This at least has already been done, but it is necessary to remember that at numerous Agricultural Institutes there is now being trained a numerous non-veterinary personnel destined to come into daily contact with the poultry farmers. These people will have received a fairly extensive experience in poultry husbandry, as well as in the various problems affecting poultry flocks, not excluding their diseases. The veterinarian entering the poultry world must also possess this requisite general knowledge.

Although the value of the individual bird before the war was small, except in the best quality of pedigree stock, each poultry farmer has a large amount of money invested in his total flock and equipment. The kind of advice required is therefore somewhat different from that most frequently given in private practice, but nevertheless it calls for skill of at least equally high order. The loss of a few birds may be of negligible importance. Its cause, in so far as it may portend far greater losses, through spread, may nevertheless be a dangerous one, and indeed may ultimately bring ruin upon the owner if not checked in time.

The average poultry farmer usually seeks advice early ; he would prefer to have it from veterinarians specially skilled in the work, but because of the rebuffs he has sometimes received he has had to seek his information and help elsewhere.

Proper investigation of poultry disease demands adequate laboratory facilities. Veterinarians pursuing investigation into poultry disease would be glad, we feel sure, of the co-operation of those members whose daily work includes calls for assistance from poultry owners. Many important links in the chain of progress could well be forged by the veterinary surgeon in general practice. For example, his opportunities are unrivalled for investigation of the incidence of disease and its clinical characteristics. Examination of the birds on the farm supplies essential information, and *post-mortem* examination can be carried out on fresh

material all the more readily. If further help is required, selected birds can be sent to the special laboratories to complete the investigation. The laboratory report received by the veterinary surgeon enables him the better to deal directly with his client.

There is therefore no reason why the poultry industry should not prosper abundantly in this country and supply eventually all the needs of our people in eggs and dressed poultry. Many of our flocks of birds are of an excellence unsurpassed in the world, and their owners pre-eminent for their knowledge of breeding and good stock sense.

Great care, however, is required to guide newcomers to the industry. A Bill which was based on the recommendations of the Poultry Technical Committee, which reported in 1938, and was designed to prevent distribution of diseased and inferior stock, passed through the House of Lords in June, 1939. This Bill but for the war would by now have been incorporated into law. Government recently appointed a Poultry Livestock Improvement Committee, whose functions to some extent fall within the recommendations of the Poultry Technical Committee. The report of that Committee was so very well received by the poultry industry that action upon its recommendations was strongly pressed for so that they could be brought into operation without undue delay.

It is now the duty of the veterinary profession to ensure that it is fully prepared for the work awaiting it in this important field. It is to the students attending the veterinary colleges that attention must be primarily directed to ensure that they obtain a much more adequate training. We may hope that the interest of the profession as a whole will be fully aroused so that the great national asset represented by the poultry industry will not suffer neglect at its hands.

The revisal of the handbook on Poultry Diseases published by the N.V.M.A. in 1937, is nearing completion. It will bring our knowledge up to date and form a most useful guide to those seeking information on this subject. Members of the profession should take every opportunity to visit poultry farms or the poultry sections of general farms, and discuss with the owners their work and problems. By these means their knowledge will be widened and the scope of their usefulness to British agriculture increased.

End of the Second World War

Since our last issue the surrender of Japan has been announced and celebrated with thanksgiving and rejoicing.

At this time of dedication of all responsible minds to the duty of re-building a shattered world on sound principles, we feel that we cannot reflect better the thoughts of our fellows than by reproducing the words of that far-sighted leader, of world status, Field Marshal Smuts :—

"The surrender of Japan crystallises the message of the war to humanity. It is the end of war or the end of humanity. It is to conquer war itself or perish. And it is appropriate that the end of the war should coincide with this supreme warning. It is the greatest occasion for thanksgiving that, at the very moment in history when man has produced a weapon with which he can destroy himself, this greatest of world wars has come to an end, and an opportunity is thus granted to humanity so to order the affairs of the world in future that no human agency shall ever again bring war upon mankind."

CLINICAL COMMUNICATION

Pyometra in a Sterilised Bitch*

F. R. SPRATLING, M.R.C.V.S.,
Reading

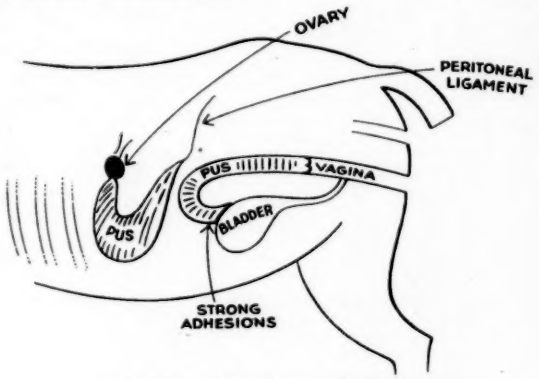
Subject.—Eight-year-old cocker spaniel bitch. Weight 24 lb.

History.—Operated upon when nine months old (after one oestrus) to prevent pregnancy. The bitch had been in season every eight months since the operation. Had been in oestrus for ten days before advice was sought. She was then showing pain in the vulva, normal oestrous discharge, suppressed urination, excessive thirst, vomiting, depression and definite abdominal enlargement. These symptoms had been developing for the previous four to five days.

Examination.—Temperature 102·8° F. I thought I could feel enlarged uterine horns.

Treatment.—August 16th, 1944. It was decided to perform an exploratory laparotomy. Nembutal (4½ gr.) administered intravenously, anaesthesia being deepened by ether inhalation.

A mid-line incision was made. The uterus was found to be in three pieces, as shown in sketch.



(Only one horn shown in sketch.)

The three pieces of the uterus were removed. The body of the uterus was pricked when separating it from the bladder, to which it was strongly adherent by fibrous tissue. This caused pus to escape into the abdominal cavity, as also occurred when the cervix was severed.

The bitch died about 16 hours after the completion of the operation.

Discussion.—The bitch had evidently been sterilised by severing the uterine body at the bifurcation of the horns, and leaving the whole viscus in the abdomen.

Both horns were alike, their posterior ends being suspended by a peritoneal ligament. The ovaries were large and apparently normal, containing ripening follicles and small corpora lutea. There was pus in both horns and in the body, that in the uterine body being thicker and creamier than that in the horns. The endometrium was engorged and cystic.

This case proves that at least in some cases of pyometra, pus-formation is not dependent on the opening of the cervix during oestrus and the entry of infection from the vagina.

Discussion

Mr. D. L. Hughes was very interested to hear of this case. He recollected a similar case described to him by Mr. R. W. L. Chesney. The subject was an aged bitch which had been spayed some years before she exhibited typical symptoms of pyometra. An exploratory laparotomy showed that the uterus had been severed between the os and uterine horns. The latter were closed and grossly distended with pus.

Such cases were of interest in that they supported the view that the bacterial infection might be haematogenous. However, those who had worked on the bacteriology of the condition were aware that many cases failed to yield cultures, and in most cases the bacterial infection was a secondary phenomenon.

Mr. N. R. Turnbull remarked that spaying by cutting through the horns or body of the uterus was an undesirable operation, as it resulted in sealing the uterus from its natural exit, thus allowing no escape for natural discharges at oestrus. This in itself might even be conducive to pyometra of the so-called "sterile" type.

Professor C. Formston said that when Mr. Spratling mentioned that he had met a case of pyometritis in a bitch which had been spayed he became very interested, for he had taken it for granted that ovariectomy had been per-

* Case presented to the Royal Counties V.M.A., at Reading, April 4th, 1945.

(*Concluded at foot of col.* 1, *page* 390.)

ABSTRACTS

[Hormonal Therapy in Relation to Veterinary Practice. Reece, R. P. (1945.) *J. Amer. vet. med. Ass.* **106**. 191-200.]

The author believes that whilst infection is the major factor concerned in reproductive failure of farm animals, there are times, nevertheless, when it is advantageous to resort to hormone therapy in these species. In this paper published reports dealing with the hormonal treatment of infertility in cattle, sheep, goats and mares are reviewed, and on the basis of these reports the author attempts an assessment of the value of various hormones for clinical use.

Dealing with the treatment of anoestrum in cattle by oestrogens, the author states that, " In summarising the more recent literature, I have noted 189 cows with ovarian inactivity which were injected with an oestrogen. Eighty-five per cent. of these cows came into oestrus. In this same group of cows, there were 81 which were bred and subsequently checked for pregnancy. Sixty, or 74 per cent. of these 81 cows conceived." He concludes that the published results appear to justify the use of oestrogens as a therapeutic agent in anoestrous cattle. A consideration of the reports dealing with P.M.S., on the other hand, leads the author to the conclusion that " one would not seem to be justified in recommending the use of P.M.S. in anoestrous cattle until more extensive studies are made to determine its effectiveness in causing oestrus, and this followed by conception." Similarly, he believes that " there appears to be little justification for the use of chorionic gonadotrophin in anoestrous animals, since its action is similar to that of the luteinising hormone of the anterior pituitary gland." He also considers that there is little indication for the use of chorionic gonadotrophin in anoestrous cows with corpora lutea present in the ovaries (suboestrum) and that this type of case is best treated by manual expression of the corpus luteum.

Reece believes that the greatest source of reproductive loss to the dairy farmer is to be found in those cows which show fairly regular oestrous cycles but either fail to conceive or conceive only after repeated services. Experimental results do not justify the use of hormonal therapy in this type of case, but the author would like to see additional experimental work carried out with chorionic gonadotrophin.

Literature dealing with hormonal therapy for cystic ovaries, retained placenta, pyometra, mummified foetus, initiation and maintenance of lactation, and sterility in the bull is also reviewed.

Since Cole and Miller first showed in 1933 that ovulation could be induced in the quiescent ovary of the anoestrous ewe by the injection of P.M.S. and that, under certain conditions, this was accompanied by oestrus, mating and conception, subsequent work has shown varying degrees of success with P.M.S. This is to be expected, since there have been a number of variable factors such as : (1) breed of sheep ; (2) nutritional state ; (3) time (in oestrous cycle) of injection ; and, (4) number of injections. Oestrogens have been used by a number of workers to induce oestrus in anoestrous ewes, and it would appear that ovulation frequently occurs following oestrogen administration. The author concludes, however, that from the point of view of the practising veterinarian, " the experimental results, although encouraging, are not extensive enough to permit one to recommend the use of oestrogens in anoestrous ewes to induce oestrus, ovulation and conception."

In mares, the greatest field of effectiveness of chorionic gonadotrophin would appear to be in precipitating ovulation at a definite time in the oestrous period.

59 references to the literature are cited. N. J. S.

* * * * * *

[Panel Discussion on Brucellosis. (1945.) *J. Amer. vet. med. Ass.* **106**. 135.]

In swine, infection with *Brucella suis* has been found in 1 to 3 per cent. of animals sent for slaughter. The disease is disseminated chiefly by infected boars and its control is accomplished by blood testing and slaughtering infected animals. No useful immunity has been developed by the use of Strain 19 vaccine and experiments show that *Br. abortus* does not infect swine though *Br. suis* will infect the cow. Infection in the pig with *Br. suis* is manifested by a bacteraemia in the early stages (up to 57 days) after which the organism localises in the lymphic glands.

Vaccination of calves with Strain 19 is carried out only in badly infected herds and they are blood tested before and after injection. It is not recommended by one speaker that aged cows and bulls be treated, but according to another speaker there is apparently no danger in causing abortion by vaccinating cows up to the fourth month of pregnancy. A drop in milk yield may occur in 20 per cent. of cows and this may last over two days.

In order to secure more effective control of bovine brucellosis, it is considered essential that the State exercise more effective control over known reactors, over the sale and traffic in untested animals and over the movement of animals from infected herds. In clean herds, the paramount importance of sanitary measures is also stressed.

Vaccination of adult animals has proved advantageous in dealing with an abortion storm, but in the clean herd the practice should be limited to calves.

Further reference is made to the accidental infection of a veterinary student with Strain 19 through spraying some of the vaccine on his eye. Symptoms resembling those of undulant fever occurred 16 days later, followed by rapid recovery.

S. J. E.

REVIEW

[The Semen of Animals and its Use for Artificial Insemination. James Anderson, B.Sc., Ph.D., M.R.C.V.S., Experimental Station, Naivasha, Kenya. *Technical Communication, Imp. Bureau Anim. Breed and Genetics*, pp. 151: 1945. Obtainable from Imperial Agricultural Bureaux, Central Sales Branch, Aberystwyth, Great Britain, price 7s. 6d.]

In 1933 the Imperial Bureau of Animal Genetics published a monograph on artificial insemination, which was largely a translation of a work by a group of Russian workers (Kusnetzova *et al.*, 1932). This monograph, which was edited and extended by Walton, was virtually the first publication in the English language dealing at any length with the modern technique and application of artificial breeding. In the intervening years intense study has been devoted by workers in many countries to the various aspects of the subject, and a formidable literature has accumulated in scientific and other journals of widely diverse type, and in a great variety of languages. In the present communication, Dr. James Anderson, of the Kenya Veterinary Service, gives a comprehensive summary of this voluminous literature, a task which only one so deeply versed in its contents and himself a master of the subject could have so ably undertaken.

The main text covers all the important literature up to late 1943 ; additional matter and later information are given in a Supplement.

The subject matter is presented in three parts. " Part I is directed particularly to the need of the scientific worker for a detailed review of the literature dealing with the study of semen, the factors which affect its production, and the properties and reactions which affect its use for insemination. Part II embraces a discussion of the use of artificial insemination in the different species, of its application in different countries and circumstances, and of the limitations imposed on its use by various factors, including those arising from the physiological processes of female reproduction. Part III describes the actual techniques of semen collection, examination and handling, and of insemination ; it is thus the section of most direct interest to those concerned with the practical application of the method."

This is a publication which will be of the utmost use, in providing a summary not only of the latest literature on artificial insemination, but also of many aspects of the physiology of reproduction. It should furnish a mine of up-to-date information for all veterinary surgeons who are from time to time called upon to diagnose and treat the various forms of infertility in the domestic animals.

formed. Lesbouyries and Berthelon have shown fairly conclusively that it is primarily an ovarian disease with exuberant progestational changes and degeneration of uterine mucosa as the chief clinical features. These workers found that ovariectomy is followed by regression and cure in from five to 15 days.

He now understood that the ovaries were not removed in the case quoted, but the cornua were ligated. One could not accept the view that pyometritis in the bitch is the accumulation of oestral discharges. During the phase of oestrus the cervix is patent. The majority of pyometritis cases (hyperplastic endometritis—Devita) develop two to five weeks after oestrus and in the initial clinical stage the cervix is closed. Normally regression of the genitalia in the non-pregnant bitch is complete within two months of oestrus and remains so until the following oestrous period. Typical pyometritis is never seen during the month when the bitch is in anoestrus.

Dr. Phyllis Kon asked if members had met many cases of pyometra in cats. In her experience, while metritis was fairly common in cats, she had rarely encountered genuine pyometra. She thought this was probably because female cats nearly always had frequent litters of kittens.

She remembered one case of what she considered to be genuine pyometra in a cat. The animal was about four years old, had never bred, and according to her owner had never been " calling." The abdomen was enormously enlarged by a very distended uterus, which could be palpated easily. There was a whitish mucoid discharge from the vulva, quite different from the typical " pyometra-discharge " of the bitch. Injection of stilboestrol had no effect on the case and metrectomy was performed. One uterine horn was found to be enormously distended by the mucoid material. The other horn was atrophied. No ovaries or ovarian tissue could be found.

She had been impressed at the time by the great distension of the horn—much larger, relatively, than anything she had ever encountered in the bitch.

Mr. N. R. Turnbull said that he had seen pyometra in the cat on a number of occasions and once had seen pyometra in one horn and a living foetus in the other.

MEMOIR

Edward Price Edwards, M.R.C.V.S.

So my old friend—'E.P.'—has passed on. I shall miss his cheery voice and his letters, so full of personality, whether they were commendatory or condemnatory. I was delighted with his last reply to me in *The Veterinary Record*, dictated, I have since discovered, whilst still weak from an attack of acute pleurisy, and I am more than happy that he had the last word. I shall, however, always treasure two pencilled notes which he wrote to me subsequently. In the first, dated July 15th, in handwriting already changed, he describes how, following a siesta after lunch, he awoke to find he could hardly see anything. "An eye specialist from Chester has been over—left about an hour ago—and gives me the cheerful news that there is a 'slight central lesion' and he does not expect normal sight to return." He goes on—"These polemical fisticuffs seem to be a sort of disease once they start, they go on a-rolling, like old man river. . . . What a rotten game politics is—dear Kathleen Mavourneen (his name for my wife) was always right about it, but we grown-up men flirt with it like moths around a lighted candle."

His second note, dated July 18th, was almost indecipherable, and no wonder; in it he says "I am trying to thank you both for being so kind: I told you in my scrawl that the eye chap diagnosed a central lesion, and I am sorry to say his diagnosis was soon more than confirmed. I crashed into the corner of the bedroom on Monday morning, and when they got me back in bed I found I had lost the use of my left arm and left leg." Determined and independent to the last—I understand from the nurse that he even insisted on addressing the envelope himself, though he had to have three tries at it. This was typical of 'E.P.'—never daunted and never accepting defeat, whether in debate or in active practice.

Concurrently in this issue of *The Veterinary Record* is published a report of the presentation made to E. P. Edwards at Chester by the Society of Veterinary Practitioners. In this is quoted an extract from one of his letters describing an episode in his busy life 60 years ago, which contrasts markedly with the armchair conditions of practice to-day. I know that he was writing up some anecdotes and experiences, connected with his professional life, and I hope it may still be possible to publish these as he had his native flair for painting pen and ink pictures.

For many of the details of 'E.P.'s' earlier years I am indebted to his intimate friend and colleague, Charles Cartwright, of Dyserth.

Edward Price Edwards was born at Hendre Farm, Merquis, Nr. Mold, his father being a farmer and leather merchant. He intended to become a chemist, but changed his studies and qualified as a veterinary surgeon in 1889, at the age of 20, at the new Veterinary College, Edinburgh; he had a great regard for Principal Williams. He assisted Mr. Munro, of Altrincham, before he commenced practice on his own at Mold, where, incidentally, Professor Williams had also practised for a while. He was recognised at a fine practitioner and obstetrician; he was an adept at the hind leg dislocation embryotomy which was originated by Mr. Munro, and he designed and had made by the local blacksmith many of the instruments which he used. He opened the discussion on an obstetrical paper at the Cambridge Congress in 1935.

E. P. Edwards had a wide practice and was ever ready to assist his colleagues. It was his custom to have three pupils articled to him; they lived in and remained for the whole of the college vacations. I remember him telling me that when he first commenced practice he had to fight not only ignorance, but superstition and witchcraft.

His intimate knowledge of the then newer therapeutic substances gained for him an enviable reputation and he developed an extensive postal service in 'drenches' in opposition to the somewhat mediaeval medicinal concoctions which were then in vogue in country districts. He was one of the pioneers in the use of antiseptic pessaries.

I believe 'E.P.' was one of the first men in North Wales to own and drive a motor car, and I have often heard him extol the virtues of the old "T" model Ford.

As many of us know, E. P. Edwards was a fluent and convincing speaker. He was widely read, and over 40 years ago founded the Mold Cosmopolitan Literary, Scientific and Social Society; this is still one of the most flourishing scientific societies in Flintshire; it has played a very important part in the social and intellectual life of Mold and district and sponsored Gilchrist and Oxford University Extension Lectures. He was also President of the Flintshire Debating Society.

He retired from practice in 1924 and married the charming Mary Young; they made a handsome pair, 'E.P.' himself being a good looker and always immaculately dressed.

In 1933, at the Llandudno Congress, 'E.P.', together with a few other stalwarts, founded the Veterinary Practitioners' League, and at the meeting of Council, N.V.M.A., in January, 1934, he proposed that the V.P.L.—subsequently changed to the Society of Veterinary Practitioners—be accepted as a division of the "National." The proposal was received with a certain amount of disquiet in some quarters, but I am certain that by the time he had finished 'spreading his fluence' all misgivings had vanished. This was 'E.P.' at his best—poetical, passionate, persuasive; when roused and in the mood, few equalled him and none surpassed him.

Although he had the practitioners' interest at heart, and was jealous of their rights, he always strenuously opposed the suggestion that members other than practitioners should be precluded from joining the Society of Veterinary Practitioners.

In 1938, I had the great pleasure, on behalf of the members of the above Society, of presenting to 'E.P.' a gold dress watch and chain and also a silver smoking compendium to him and Mrs. Edwards.

Although for several years his health had been impaired, he continued until last year to carry out in a most conscientious manner the duties of Honorary Treasurer to the Society of Veterinary Practitioners—no light task when one remembers that he had helped it to grow and become the largest division of the N.V.M.A., comprising over 600 members. Unlike most Hon. Treasurers, 'E.P.' did not enthuse when the Society began to accumulate funds; in his opinion this was symptomatic of inactivity, and he would feign have seen more money spent in organising meetings and demonstrations to further the interest of members. He was ever zealous that the torch which he had lit should become a shining beacon—a guiding light to the whole profession. The hand that lit that torch is no more, but the light remains, an example and inspiration to all.

His married life was ideally happy, and their many friends will sympathise with Mary Edwards, who is not only bereaved, but is herself seriously ill.

H. W. S-B.

. . . . . .

The cremation took place at Landican, Nr. Birkenhead, on Wednesday, August 1st. Members of the profession who attended, either at the house or at the crematorium, were: Messrs. C. W. Cartwright, F. Chambers, H. V. Hughes, T. W. Hughes, W. Hughes, H. L. Llewelyn Jones, P. T. Lindsay, H. W. Steele-Bodger and Professor J. G. Wright.

. . . . . .

Presentation to the Late Mr. E. P. Edwards

Society of Veterinary Practitioners' Tribute

At a meeting of the Society of Veterinary Practitioners held in Chester on March 1st, under the chairmanship of the President, Major F. Chambers, and with 48 practitioners and others present, a presentation was made to the late Mr. E. P. Edwards.

Mr. Edwards was asked to accept an illuminated address and also a cheque. The address was in book form bound in Morocco leather and it was signed by all the office-bearers of the Society as well as by a number of the older members.

Mr. Edwards' health on that date was very fair and all were delighted that he was able to make the journey and be present himself at the meeting.

Major Chambers, in making the presentation to Mr. Edwards, said: "One of my first duties as President of the Society of Veterinary Practitioners is a very pleasant one. It is to present to Mr. E. P. Edwards a cheque and illuminated address subscribed for by members of the Society as a token of our appreciation for what he did for the Society when he was for many years Treasurer. As many of you know, the Society was formed by a few practitioners in N. Wales in an attempt to control the infiltration tactics of other branches of the veterinary profession into the legitimate field of veterinary practice. That is how the Society came into existence and Mr. Edwards was one of the founders and a most energetic member for years."

Turning to Mr. Edwards, the Chairman added: "I hope you will accept this small token of our regard and affection and that you will be spared for many years to be with us."

Mr. Steele-Bodger: "No presentation which the Society can make to Mr. Edwards can adequately repay him for all that he has done for or on behalf of its members. In honouring Mr. Edwards the Society is in reality honouring itself. Few of those present to-day are in a position to appreciate their indebtedness to Mr. Edwards during his long association with the Society, particularly during those early strenuous years when we had an uphill fight, when our every action was suspect and when, had it not been for the integrity, determination and dogged persistence of Mr. Edwards combined with his native and inherent powers of persuasion, the Society might well have failed to survive; certainly it would never have achieved the high position that it holds to-day in the esteem of the "National," nor would it have succeeded in accomplishing such a fine record of work on behalf of the profession as a whole and on behalf of the practitioners of the profession in particular.

"E. P. Edwards was not only our founder, he was our guiding star, and though ill-health might prevent that degree of activity

to which we are accustomed yet he is still, and always will be, the individual to whom we instinctively turn for advice and support. No one in the profession has better cause to appreciate the extent and worth of that help than myself. No one, also, has better reason to know the great and never failing help which Mrs. Edwards has been to her husband and through him to the Society: always gracious, always cheerful, she is a tower of strength to 'E.P.' Alas! Mrs. Edwards is now very ill though still indomitably cheerful, and I am sure that it is your wish that Mr. Edwards should convey to his gracious lady our sympathy, and we hope that, with the approach of summer, the health of both will improve so that they may long enjoy that companionship, as they so richly deserve to do.

Mr. Steele-Bodger, continuing, recalled Mr. Edwards' reputation as a practitioner, when for many years he was regarded as the outstanding clinician of North Wales, and proceeded: "I think it is salutary that in these days of the motor car and 'kid glove' conditions of practice we should pause and consider how our elders and, in many ways, our betters, had to earn their living. In this connection I would like permission to quote from a letter which I received from our worthy friend some few weeks ago:—

"'. . . talking of bad winters, I see the papers are recalling that of 1895 which I remember well. We had snowstorm after snowstorm for nearly a week and savage frost, and up in the hill country there were snowdrifts in places six or seven feet high. On horseback was at first the only way to get anywhere and that only in the flatter country, but later the roads became frozen like iron on the surface and for six weeks I turned no wheel of my high gig and travelled entirely in a light sleigh which I fortunately possessed, and never have I travelled more enjoyably. Most days there was a brilliant sunshine and little wind, the sleigh—the work of a local carpenter—was very light with good ground clearance, the harness was of the lightest with breast strap instead of collar, and my nippy cobs made mockery of the work as the steel skids sped over the miles to the music of a tinkling bell on their necks—it was grand whilst it lasted. Sounds quite idyllic perhaps, but journeys into the hill and mountain country were not an unmixed joy. Often we came to drifts and had to dig a passage with the spades we carried. On the Llanarmon and Llandegla moors it was pitiful to see the grouse so starved and exhausted that one could easily have caught them, and how many perished can only be surmised. I had this sleigh for many years and never missed using it when conditions were suitable, until one day a shackle holding one of the shafts up broke, letting it down to thrash the cob's leg, whereupon he promptly ran away at full gallop down the sleep hill into Mold from Ruthin, hit a big stone in the gutter at the side of the road and pitched me out into a snowbank, scared but unhurt, and leaving the wreck of the sleigh behind him. The cob galloped on into the town and curiously enough, standing talking to the policeman who gallantly stopped the animal, was my father, and he, recognising it, promptly hired a trap and started off on my route to pick up the possible remains he must have feared. His relief to find me all right and walking home was perhaps no more full than my own to know that the cob had not killed anyone on his mad journey. I put that cob into a heavy gig on a long journey in the afternoon, so that he would not have time to brood over the affair, and rather to my surprise and relief he behaved beautifully, which is unusual after such an experience.'

"I think that that letter is typical of the man to whom we are pleased to pay tribute to-day—one who could always see the bright side of a situation, one to whom the caption could well apply—'To us the difficult is easy, though the impossible may take a little longer.'

"May I, in conclusion, convey to Mr. Edwards my personal thanks for innumerable kindnesses and for the privilege of a very valued friendship."

Mr. Llewellyn-Jones: "I am glad to be present to witness the presentation to my old friend, Mr. E. P. Edwards, and to see him so well and active for a man of his age; my one regret is that Mrs. Edwards is unable to be present on account of ill-health. I hope you will convey our sympathy and best wishes to her from all here.

"On the Agenda it is stated that a presentation will be made to one of the founder members of the S.V.P.—it should read *The* founder member, for we know—or at least I know—that such is the case.

"In the early thirties, when there was great agricultural depression, things were not going too well for us practitioners. The Veterinary Advisory Scheme had been launched and some encroachment on our practices was taking place and I for one told my tale of woe to our friend and champion. Then one day a request came from Mr. Edwards asking me and Charles Cartwright, of Dyserth, to go to see him. He had apparently been thinking the matter over and he laid before us that evening a scheme for the protection of the practitioner's rights. It was there and then that the foundation was laid and the scaffolding put up for further construction. It took us 12 months or more before we were able to call a meeting of North Wales practitioners and that happened in this very hotel in 1933. There were 12 or 13 of us present and it was unanimously agreed to set up the Veterinary Practitioners' League. When this became known some unkind criticisms were made and we were called the 'Anti-advisory League' and the 'League of Wild Men from North Wales.'

"The title was eventually changed to the Society of Veterinary Practitioners, which has become the largest and strongest division of the 'National.' From the very word 'go' 'E.P.' has spared neither time, money nor energy to make it the huge success it is to-day—though he had retired from general practice some years before 1933.

"We all wish you health and happiness and, to Mrs. Edwards, a speedy recovery."

Mr. E. P. Edwards, acknowledging the presentation, said how greatly his appreciation was enhanced by the kindness of the references to his wife and himself. For his part, such work as he had been enabled to do for the Society had indeed been a labour of love, and he had already been amply rewarded by the success of the Society and the friendship of its members. In saying this, however, he was deeply conscious of the fact that much of the credit which had been attributed to him properly belonged to others.

ANIMAL DISEASES RESEARCH ASSOCIATION

Twenty-fifth Anniversity

Economic Value of Veterinary Research

Some of the achievements of the Animal Diseases Research Association were described by the Director, Dr. Russell Greig, at the 25th Annual General Meeting of the Association which was held at Moredun Institute on July 25th. The Duke of Buccleuch and Queensberry, as Honorary President of the Association, presided.

On the semi-jubilee occasion, Dr. Greig sketched the chief activities of the Association since its inauguration and gave a survey of the work in progress. Dealing with the issue of products, he said that in 1929 the issue of braxy vaccine was approximately 52,000 doses; this year over 154,000 doses were required. In 1929, 9,600 doses of lamb dysentery serum were issued; this year the figure was 94,600. In 1935, when louping-ill vaccine was first offered for general use, 41,700 doses were issued; to-day the requirements were approximately 220,000 doses.

These figures, which he believed were likely, for some time, to show progressive increase, might be allowed to speak for themselves.

As an instance of the economic saving to agriculture afforded by veterinary research, the Honorary President referred to some figures recently given by the Secretary of State for Scotland.

In the case of five diseases which had been investigated by the Association and for which preventive and curative means had been devised, it was conservatively estimated that the saving to agriculture of a sum of over £600,000 was being effected annually. He thought that few agricultural research institutes could claim to have accomplished so much on such modest expenditure.

Sir Patrick Laird, Secretary of the Department of Agriculture for Scotland, said that the Department appreciated the Association's work and were determined to continue to render active support. It was true to say that in comparison with the magnitude of the results achieved the contributions made from State funds had been on a relatively small scale.

Weekly Wisdom

"Naming things too soon, before sufficient information has been acquired, blocks the accumulation of knowledge. Hair-splitting discriminations, with the addition of high-sounding nomenclature, have not really opened up the unexplored territories of the involutional psychoses. . . . Anxiety neurosis, too, is one of the main territories of the special fears or phobias, with a hopeless multiplication of names derived from Greek roots. More important it is to remember that these phobias represent a substitution for deeply hidden psycho-pathological material. The raison d'être *of the phobia is to keep out of consciousness submerged complexes which the personality of the patient cannot face. . . ."*—Edward A. Strecker. [What this brilliant American clinician, teacher and writer, now dead we regret to learn, has contrived to say about the shape of things within his special field of craftsmanship—that so much risks being drowned by lesser men in a sea of words—will bring back an echo, we may be sure, from *every* field that touches on the healing art, not excepting those fields that touch on the art as applied to the animal world. And—it may not be too much to add—his manner of saying so very much that is worth saying about things as they really stand at the moment in his own craft will also commend itself favourably, we have no doubt at all, to everyone like him who has striven earnestly to gather enough information in his, or her, particular craft before holding forth with a flow of high-sounding words which in the end tend to confuse rather than clarify the general understanding.]

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Aug. 25th.—Summer Meeting of the Society of Women Veterinary Surgeons at Liverpool Veterinary Field Station, "Leahurst," Windle Hill, Neston), 2.15 p.m.

Aug. 30th.—Annual Meeting of the Lincolnshire and District Division, N.V.M.A., at Lincoln (Saracen's Head Hotel), 2 p.m.

Sept. 15th.—Applications due for Miss Cust Research Scholarship.

Sept. 19th.—R.C.V.S. Committee Meetings.

Sept. 20th.—R.C.V.S. Committee Meetings.

Sept. 21st.—**R.C.V.S. Council Meetings.**

Sept. 25th-28th.—**N.V.M.A. Annual Meetings, 1945: See detailed provisional programme announcement inset.**

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PERSONAL

Birth.—Robertson.—To Marjorie Elaine (Margot) (*née* Singleton), wife of Major A. I. Robertson, R.A.V.C., at St. Philomena's Nursing Home, Bangalore, South India, on July 7th, 1945—a son.

Veterinarian's Degree at Queen's.—Mr. W. R. Kerr, B.Sc., (Belf.), M.R.C.V.S., D.V.S.M., of the Veterinary Research Division, Ministry of Agriculture, Northern Ireland, received the degree of Doctor of Philosophy at the summer graduation in the Queen's University of Belfast. The degree was awarded on a thesis on Trichomoniasis. Mr. Kerr is the first veterinary graduate to secure a Ph.D. degree in the Queen's University.

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Veterinary Student's Gallantry.—At an inquest recently held at Looe (Cornwall), the Coroner (Dr. E. S. Toogood) highly commended the conduct of a veterinary student who attempted to save from drowning at Talland Bay a nine-year-old boy whose canoe had capsized.

Mr. Roger Brown, veterinary student, of Reading, who was on a walking tour, said that when he heard of the boy's difficulties he swam out about half a mile and found the boy floating face downwards. He brought him ashore and assisted in artificial respiration for some time, but there was no sign of life.

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R.C.V.S. OBITUARY

Taylor, Harold Clinton, Capt., late R.A.V.C., Victoria Avenue, Waiuku, New Zealand. Graduated London, May 18th, 1892. Died July 20th, 1945.

Lyons, Joseph, Lt.-Col., 62, Albert Street, Auckland, New Zealand. Graduated N. Edinburgh, March 30th, 1896. Died July 24th, 1945.

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GENERAL OBITUARY

Professor Tomaš Vacek

We learn with deep regret of the death, which took place in a German concentration camp, of Dr. Tomas Vacek, who was Professor of Veterinary Physiology at Brno, Czechoslovakia.

Tomas Vacek was a man of great personal charm as well as being a first-class research worker. He was responsible for many original physiological observations and some of our readers may remember his contribution "The Nervous and the Hormonal Regulation of the Mammary Gland," given to the 13th International Veterinary Congress at Zürich in 1938. In 1937 he published a text-book on Physiology in the Czech language. Sir Frederick Hobday, in one of his lightning Continental tours of the late twenties, met this then young man and he was partially responsible for bringing him to this country. In England, Vacek worked with D. T. Harris at St. Thomas's Hospital, and during this period associated with others in the physiological world.

His striking personality and honesty of purpose are well exemplified, to those of us who knew him, in the way he met his death. To use the words of his wife, "My dear husband, Professor Dr. T. Vacek, died on April 14th, 1942, in the Concentration Camp, Maüthaüsen, in Germany. He loved too much the land and people which were his own and so dear to his heart."

Vacek was taken by the Gestapo on December 17th, 1941, and imprisoned at first in his own University town of Brno and then in Germany, where he died "after such sufferings that only Germans could prepare."

Our profession and the world of International Science can ill afford to lose men of Vacek's calibre, especially when the tragic circumstances of his death are remembered. To his talented wife and son we must offer our sincere sympathies.

ADDRESSES OF DISEASE-INFECTED PREMISES

Foot-and-Mouth Disease:

Lancs.—Lower Lomax Farm, The Summit, Heywood (Aug. 11th).

Swine Fever:

Bucks.—Woodlands Farm, Chinnor Hill, Bedlow-cum-Saunderton, High Wycombe (Aug. 6th).

Carms.—3, Amman Terrace, Rhosamman, Brynamman, Ammanford (Aug. 13th).

Glam.—Plot 48, College Farm Allotments, Cardiff (Aug. 13th).

Herts.—Walkern Park Farm, Walkern, Stevenage (Aug. 7th); Letchmore Heath Farm, Letchmore Heath, Watford (Aug. 8th); Ansell's End, Kimpton, Hitchin (Aug. 9th).

Hunts.—Middlemoor Drove, Ramsey St. Mary's (Aug. 11th).

Kent.—Hillside, Farningham, Dartford (Aug. 10th).

Lincs.—Allotment, Station Road, Tydd Gote, Tydd St. Mary (Aug. 13th).

Northants.—Maple Farm, Collingtree, Northampton (Aug. 9th).

Surrey.—"Nutfield," Hookley Lane, Elstead, Godalming (Aug. 10th).

Warwicks.—The Stores, Higham-on-the-Hill, Nuneaton (Aug. 6th); Hall Farm, Witherley, Atherstone (Aug. 9th); Victoria Cottages, Livingstone Road, Perry Bar, Birmingham (Aug. 11th).

Yorks.—17, Highfield View, Barlby, Selby; "Oakleigh," Holme Lane, Selby (Aug. 6th); Tindall's Farm, Osgodby, Barlby, Selby; Bleak House, Ouse Bank, Barlby, Selby (Aug. 7th); The Grove, Barlby, Selby (Aug. 8th).

Sheep Scab:

Caernarvonshire.—Plas Iolyn, Pentrevoelas, Bettws-y-Coed (Aug 7th).

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UNIVERSITY OF LONDON EXAMINATIONS IN VETERINARY SCIENCE

Following is the July, 1945, Pass List of the Examinations in Veterinary Science held by the University of London:—

First Examination (for internal students).—Briault, Michael O'Meara; Graves, John Andrew; Morris, Robert Ernest; Ryde, Paul Scrivener; Toovey, James Arnold.

The following Higher School Candidates have completed exemption from the First Veterinary Science: Anderson, Eileen Marjorie; Bainbridge, John Graham; Phillips, John Gilmour.

All the above are students of the Royal Veterinary College.

First Examination (for external students).—The following Higher School candidate has completed exemption from the First Veterinary Science: Goodwin, Reginald Frederick William, Private study.

Second Examination (for internal and external students).—Betty, Ronald Winslade; Cross, Barry Albert; Darcel, Colin le Quesne; Marchant, Irene Florence. (All of the Royal Veterinary College.)

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

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VETERINARY EDUCATION

Sir,—Dr. W. R. Wooldridge, in his letter in your issue of to-day (August 4th), has left unanswered the questions put to him in the first part of my letter in your issue of July 14th, and has masked his reply to the plain question put to him in the last paragraph of my letter by reiterating a number of expatiatory statements which he was not called upon to make until, at any rate, his view at the moment on the advisability of retaining or of abandoning "*the present system of licensing*" (as described in the words of the First Report, 1938, of the Departmental Committee on Veterinary Education) was made clear to us.

From the wording of that First Report, the impression gained by the veterinary profession generally was that the Committee favoured the *retention* of the system. In that belief, the profession as to a large majority (including the present writer) proceeded to accord support to the findings, which were largely consequential, of the Report as a good basis for further examination of the problem of veterinary education having regard to the much increased demands that were being made for help to it from public funds.

From the wording of the Second Report of the same Committee published only six years later, in 1944, and the general tone of Dr. Wooldridge's subsequently published utterances, the impression gained by the veterinary profession at least equally generally has been that the Committee has recommended the outright *abandonment* of the system. In this belief the profession, again as to a large majority (including the present writer) has found itself unable to accord support to the findings of this Second Report as a sound basis for further examination of the problem of veterinary education.

Dr. Wooldridge and his colleagues on the Committee may rest well assured that if they had stated frankly to the profession that

they had changed their mind during the period between the two Reports, both on that cardinal point of the system of licensing as well as on the contingent one of the government of the profession (which, however, was somewhat outside their terms of reference), and, moreover—what is all-important—provided sound evidence for that change of mind, their later findings would then have met with a promptly cordial and generous response from the profession.

As it is, the profession generally cannot escape the genuinely held impression that the drastically changed tone of the recommendations in the successive Reports was wrought upon a few assumptions that are not well founded and a few statements of fact that are not wholly accurate.

It would exceed the compass of a letter to display all the argument necessary to explain the reasons for that unfavourable impression. It is hoped, however, that the submission of a little of it may tend ultimately towards a salutary turning of attention, as Dr. Wooldridge desires, to contriving a better solution of veterinary education (should any better one be thought, with sound reason, to exist than the one evolving under the control of the profession itself). That turning can best be achieved only by disentangling education, as it must be disentangled, so far as it can be disentangled, from licensing of entrants and government of the profession—for which tangle the Committee of which he was a member have largely themselves to blame. The following two points of argument are thus respectfully put forward as an earnest of the above expressed hope:—

(1) Embedded in the text of the Second Report (1944) is this statement: "*Sustained efforts on the part of succeeding generations of veterinary surgeons have been necessary to bring order out of the existing disorder, to improve scientific training and to bring the profession under disciplinary control*" (para 17, p. 12) (my italics).

This statement follows on a short historical preamble that is inaccurate, but, nevertheless, as a general proposition, such as could be based on close historical analysis, the statement happens to be profoundly true.

If we accept the validity of this proposition, then the whole corpus of recommendations in the Second Report are a *non sequitur*.

(2) In the two Reports in question, much easily accessible, pertinent factual material has been overlooked, such as, for example, the following figures extracted from lists given in the Registers and Minutes of the R.C.V.S.:—

College	*Fitzwygram Prizes, 1st and 2nd,* 1905-1944	*Walley Prizes,* 1900-1944	*Williams Prizes,* 1908-1944
London	38 (46·9%)	29 (60·4%)	14 (37·8%)
Dublin	18 (22·2%)	12 (25·0%)	10 (27·0%)
Edinburgh	18 (22·2%)	6 (12·5%)	10 (27·0%)
Glasgow	5 (6·2%)	0 (0·0%)	1 (2·7%)
Liverpool	2 (2·5%)	1 (2·1%)	2 (5·4%)

Dr. Wooldridge and his colleagues in their Second Report state: "*We are convinced that the best training can be secured only by persuading universities to undertake responsibility for that training*" (para. 14, p. 11). Again, in his letter in your issue of June 30th, in which he returns to this advocacy with undiminished feeling, he says: "*The suggestion that the universities would lower the standard of our professional education is just fantastic*" (my italics in both cases).

That is not the point. Would they raise it?

A feeling of conviction, as has been elsewhere well said, is one thing, and an intellectual certainty quite another thing. One of the five colleges listed in the above Table has had the blessings, unique to itself, of being a school *within* a university for 40 years. It is *not* to be found at the top of the list. And this, I would hasten to add, is not because the human material upon which it has had to operate is in any way inferior to the rest, as is abundantly testified by later achievement, or the teachers employed devoid of high distinction.

Furthermore, the profession left to its unfettered choice, as was manifested particularly in the last, keenly contested, R.C.V.S. election, voted men to its governing body whose names in large part are found distributed in the lists from which the figures in the Table are drawn, the two selected for special mention by Dr. Wooldridge himself in his letter in your issue of June 30th as heading the poll, attaining conspicuous place in the lists and since then acquitting themselves meritoriously in the clinical and scientific fields, respectively. That, it can fairly be added, is not invariably the way of nomination from our ranks to councils and committees and such high advisory or directive places by governments and other outside bodies.

Far be it from me to counsel intellectual segregation for the veterinary profession. Such would be belied at once by my actions in working and living in the closest harmony with university people. But what I still fail to see, in spite of Dr. Wooldridge's advocacy, is why all those benefits of close association—which in truth are for the most part within the reach of anyone who cares for them, or rather, perhaps, in his heart really desires to live up to them, under our present system of licensing—ever need be assumed to be purchasable only at the cost of such a sacrifice as our present professional independence.

There are other ways of securing for the profession generally the best from that association, which I am not now called to dwell upon, but they are almost entirely overlooked in the Second Report in question and in all Dr. Wooldridge's utterances.

Yours faithfully,

University of London Club, J. T. Edwards.
21, Gower Street, W.C.1.
August 4th, 1945.

. . . . . .

Sir,—I have in my letters to you many times accused Dr. Wooldridge of making most erroneous statements concerning what would be one of the effects if the recommendations of the Loveday Committee were carried out, but he is apparently either unable or unwilling to take up the challenge.

In the face of these accusations all he can do is to shoot off at a tangent into the totally irrelevant matter of whether education within the universities or the affiliated schools would be the better!

In the absence of any reply to my oft-repeated accusations, the profession will be able to draw its inference, and you, Sir, find the opportunity to insert below this letter: "this correspondence, in so far as it relates to the one-portal aspect of veterinary education, will now cease"—in order that the Loveday recommendations may be discussed.

Yours faithfully,

23, Queen's Gate Gardens, Thomas Lishman.
London, S.W.7.
August 7th, 1945.

. . . . . .

Sir,—It has been asserted that under the recommendations contained in the Second Report of the Loveday Committee, *the essence of the one-portal system is maintained.* This is *incorrect*.

The Committee should have bluntly stated that it considered that this system of entry should go, and that the universities be allowed to grant registrable degrees. Had it done so, then by now the whole question of whether university co-operation in veterinary education would be beneficial or not would have been discussed and *settled*.

The result has been that attention has been focussed practically on one point, and the Report has not received the critical examination that it merits.

The Loveday Committee was specifically asked to devise plans for the best possible training of the veterinary surgeon of the future, having regard to the anticipated expansion of the profession, not only in this country, but in our colonies (for it is virtually safe to assume that as the progress of pastorial colonial peoples depends largely upon the adequate production of dairy and other livestock products, the role of our profession is likely to become increasingly important, even if up to the present it has been largely concerned with the major diseases).

It has come to the conclusion that university training alone can effect this, and whilst it has emphasised that university degrees in veterinary medicine shall be registrable qualifications, it has not been similarly emphatic in making it clear that unless veterinary education is accorded the same status as other branches of learning already in existence at a university, the success expected cannot materialise. In no other way is it possible for the veterinary teacher as well as the student to take their full part in university life and to experience its full effects. In his recent letter to *The Times*, Dr. J. T. Share Jones has clearly indicated what this means, for only by administering and teaching in a full veterinary faculty or department will it be possible for the veterinary teachers to introduce effectively into the university those new problems and spheres of work which could be such valuable additions to university studies.

I have come to the conclusion that there is a clear cut and easy solution to this present controversy, provided all parties first of all agree on the following two basic principles:—

(1) That any veterinary centre established at a university shall be given the same status as other branches of learning already in existence at that university.

(2) That the R.C.V.S. in full collaboration with such university shall select and appoint a board of examiners in the essential five basic veterinary subjects enumerated by Dr. J. T. Share Jones, namely, veterinary anatomy, animal husbandry, veterinary pathology, veterinary medicine and veterinary surgery.

Much has been said about providing the R.C.V.S. "with full powers of inspection of teaching facilities and examination." Nobody has yet shown that this ever did anything but irritate people, and let it be recalled that this is what virtually wrecked the R.C.V.S. within a few months of its coming into existence in 1844, and that it was the adoption of a common examination, as the sole effective means of control, that afterwards brought satisfactory unification in 1881.

Yours faithfully,

"Rothiemurchus," J. F. D. Tutt.
St. Cross, Winchester.
August 4th, 1945.